

3/1/2006 Response to Office Action  
U.S.S.N. 10/807,064

Page 2

#### Listing of Claims

1. (original)A chemical-mechanical polishing pad comprising a polymeric material and a component selected from a liquid, a solid, or a mixture thereof, wherein the polymeric material has pores and the component is disposed within the pores.
2. (original)The polishing pad of claim 1, wherein the component is disposed within about 70% or more of the pores located within about 1000  $\mu\text{m}$  or less of the surface of the polishing pad.
3. (original)The polishing pad of claim 1, wherein the polymeric material is a thermoplastic polymer or a thermoset polymer.
4. (original)The polishing pad of claim 3, wherein the thermoplastic polymer or the thermoset polymer is selected from the group consisting of polyurethanes, polyolefins, polyvinylalcohols, polyvinylacetates, polycarbonates, polyacrylic acids, polyacrylamides, polyethylenes, polypropylenes, nylons, fluorocarbons, polyesters, polyethers, polyamides, polyimides, polytetrafluoroethylenes, polyetheretherketones, copolymers thereof, and mixtures thereof.
5. (original)The polishing pad of claim 4, wherein the thermoplastic polymer or the thermoset polymer is selected from the group consisting of polyurethanes and polyolefins.
6. (original)The polishing pad of claim 1, wherein the component is a liquid.
7. (original)The polishing pad of claim 6, wherein the liquid is a solution comprising a solvent and a solute.

Cabot Microelectronics Corporation  
870 North Commons Drive  
Aurora, IL, 60504  
Tel. (630) 375-5465

3/1/2006 Response to Office Action  
U.S.S.N. 10/807,064

Page 3

8. (original)The polishing pad of claim 7, wherein the solution comprises at least two solution phases.

9. (original)The polishing pad of claim 8, wherein the solution comprises at least two solution phases at about 40 °C or less.

10. (original)The polishing pad of claim 7, wherein the solution comprises one solution phase.

11. (original)The polishing pad of claim 10, wherein the solution comprises one solution phase at about 40 °C or less.

12. (original)The polishing pad of claim 7, wherein the solution is a thermoreversible gel.

13. (original)The polishing pad of claim 12, wherein the thermoreversible gel comprises polyethylene and xylene.

14. (original)The polishing pad of claim 1, wherein the component is a solid.

15. (original)The polishing pad of claim 14, wherein the solid consists essentially of particles having a largest diameter of about 1  $\mu\text{m}$  or less.

16. (original)The polishing pad of claim 14, wherein the solid is conductive.

17. (original)The polishing pad of claim 14, wherein the solid consists essentially of abrasive particles.

Cabot Microelectronics Corporation  
870 North Commons Drive  
Aurora, IL, 60504  
Tel. (630) 375-5465

3/1/2006 Response to Office Action  
U.S.S.N. 10/807,064

Page 4

18. (original)The polishing pad of claim 17, wherein the abrasive particles comprise metal oxide selected from the group consisting of alumina, silica, titania, ceria, zirconia, germania, magnesia, co-formed products thereof, and combinations thereof.

19. (original)The polishing pad of claim 1, wherein the polishing pad has a density of about 2 g/cm<sup>3</sup> or less.

20. (original)The polishing pad of claim 1, wherein the polishing pad has a void volume of about 75% or less.

21. (original)The polishing pad of claim 1, wherein the polishing pad has a pore density of about 10 pores/cm<sup>3</sup> or greater.

22. (original)The polishing pad of claim 1, wherein the average pore diameter is from about 0.1 μm to about 5000 μm.

23. (original)The polishing pad of claim 1, wherein the polishing pad further comprises a polishing surface comprising grooves.

24. (original)The polishing pad of claim 1, wherein the polishing pad further comprises an optically transmissive region.

25. (original)The polishing pad of claim 24, wherein the optically transmissive region has a light transmission of at least 10% at one or more wavelengths between from about 190 nm to about 3500 nm.

26. (original)The polishing pad of claim 1, wherein the polishing pad further comprises abrasive particles.

Cabot Microelectronics Corporation  
870 North Commons Drive  
Aurora, IL, 60504  
Tel. (630) 375-5465

3/1/2006 Response to Office Action  
U.S.S.N. 10/807,064

Page 5

27. (original)The polishing pad of claim 26, wherein the abrasive particles comprise metal oxide selected from the group consisting of alumina, silica, titania, ceria, zirconia, germania, magnesia, co-formed products thereof, and combinations thereof.

28. (original)The polishing pad of claim 1, wherein the pores comprise about 70% or more open-celled pores.

29. (original)The polishing pad of claim 1, wherein the pores comprises about 70% or more closed-celled pores.

30. (original)The polishing pad of claim 1, wherein the polishing pad has a first surface, an opposing second surface, and a thickness between the first and second surfaces, wherein at least some of the pores are located within a first region of the polishing pad defined by the first surface and about 10% or less of the thickness of the polishing pad, and wherein the component is disposed within about 70% or more of the void volume of the pores within the first region.

31. (original)The polishing pad of claim 30, wherein at least some of the pores are located within a second region of the polishing pad defined by the second surface and about 10% or less of the thickness of the polishing pad and wherein the component is disposed within about 70% or more of the void volume of the pores within the second region.

32. (original)The polishing pad of claim 30, wherein the first region has a volume of about 10 cm<sup>3</sup> or less.

33. (original)The polishing pad of claim 31, wherein the second region has a volume of about 10 cm<sup>3</sup> or less.

34. (original)The method of polishing a substrate comprising

Cabot Microelectronics Corporation  
870 North Commons Drive  
Aurora, IL, 60504  
Tel. (630) 375-5465

3/1/2006 Response to Office Action  
U.S.S.N. 10/807,064

Page 6

- (i) providing a workpiece to be polished,
- (ii) contacting the workpiece with a chemical-mechanical polishing system comprising the polishing pad of claim 1, and
- (iii) abrading at least a portion of the surface of the workpiece with the polishing system to polish the workpiece.

35. (original)The method of claim 34, wherein the polishing pad further comprises abrasive particles selected from the group consisting of abrasive particles, polymer particles, composite particles, water-soluble particles, and combinations thereof.

36. (original)The method of claim 35, wherein the abrasive particles comprise metal oxide selected from the group consisting of alumina, silica, titania, ceria, zirconia, germania, magnesia, co-formed products thereof, and combinations thereof.

37. (original)The method of claim 34, wherein the method further comprises detecting *in situ* a polishing endpoint.

38. (original)A method for producing a chemical-mechanical polishing pad comprising:

- (i) providing a polymeric material comprising gas-filled pores,
- (ii) subjecting the polymeric material to a pressure differential,
- (iii) contacting at least one surface of the polymeric material with a medium comprising a component selected from a liquid, a solid, or a mixture thereof,
- (iv) allowing the medium comprising the component to permeate at least a portion of the pores of the polymeric material, and
- (v) forming the polymeric material comprising component-filled pores into a chemical-mechanical polishing pad.

Cabot Microelectronics Corporation  
870 North Commons Drive  
Aurora, IL, 60504  
Tel. (630) 375-5465

3/1/2006 Response to Office Action  
U.S.S.N. 10/807,064

Page 7

39. (original)The method of claim 38, wherein the polymeric material is contacted with the medium after subjecting the porous polymeric material to a pressure differential.

40. (original)The method of claim 38, wherein the polymeric material is contacted with the medium prior to subjecting the porous polymeric material to a pressure differential.

41. (original)The method of claim 38, wherein the pressure differential is a pressure below atmospheric pressure.

42. (original)The method of claim 38, wherein the pressure differential is a pressure above atmospheric pressure.

43. (original)The method of claim 38, wherein the medium comprising the component is disposed within the pores by the pressure differential.

44. (original)The method of claim 38, wherein the polymeric material comprising component-filled pores is compressed to form a polymeric sheet.

45. (original)The method of claim 38, wherein the component is a liquid.

46. (original)The method of claim 38, wherein the liquid is a solution comprising a solvent and a solute.

47. (original)The method of claim 38, wherein the component is a solid.

48. (original)The method of claim 47, wherein the solid consists essentially of particles having a largest diameter of about 1  $\mu\text{m}$  or less.

Cabot Microelectronics Corporation  
870 North Commons Drive  
Aurora, IL, 60504  
Tel. (630) 375-5465

3/1/2006 Response to Office Action  
U.S.S.N. 10/807,064

Page 8

49. (original)The method of claim 47, wherein the solid is conductive.

50. (original)The method of claim 47, wherein the solid consists essentially of abrasive particles.

51. (original)The method of claim 50, wherein the abrasive particles comprise metal oxide selected from the group consisting of alumina, silica, titania, ceria, zirconia, germania, magnesia, co-formed products thereof, and combinations thereof.

Cabot Microelectronics Corporation  
870 North Commons Drive  
Aurora, IL, 60504  
Tel. (630) 375-5465